WHAT IS CLAIMED IS:

1. A method for controlling a mobile terminal's transmit power in CDMA-TDD system, comprising:

(a) receiving a power control message from a base-station transmitted via a downlink;

(b) acquiring a channel gain value between said mobile terminal and said base-station according to information transmitted via the downlink;

(c) calculating a value of the transmit power of said mobile terminal according to said power control message, said channel gain value and a set processing gain value; and

(d) adjusting the transmit power of said mobile terminal according to said value of the transmit power, wherein said adjusting the transmit power of said mobile terminal is synchronized with those of other terminals assigned within a same time slot.

2. The method of claim 1, wherein said power control message at lease includes items of background noise, inter-cell interference power level and target signal-to-interference ratio which have changed.

3. The method of claim 2, wherein step (c) further includes a step of calculating the value of the transmit power according to following formula:

$$p_i = \frac{SIR_{t\arg eti} \cdot (I_{\text{int } er} + N_{bk})}{r_i \cdot (G + SIR_{t\arg eti}) \cdot (1 - \sum_{i=1}^{n} \frac{SIR_{t\arg eti}}{G + SIR_{t\arg eti}})}$$

Wherein:

-P_i is the value of the transmit power of the mobile terminal;

-$SIR_{target\ i}$ is a target signal-to-interference ratio;

-I_{inter} is inter-cell interference power level;

-N_{bk} is background noise;

-r_i is the channel gain;

-G is the processing gain;

-n is the number of mobile terminals assigned within one time slot;

wherein N_{bk}, I_{inter} and $SIR_{target\ i}$ are acquired according to said power control message transmitted via the downlink.

4. The method of claim 3, wherein those items of background noises, inter-cell interference power level and target signal-to-interference ratio which have not changed should not be included in said power control message and said items will still be used in a calculation of a new power value.

5. The method of claims 3 or 4, wherein when all of said mobile terminals have substantially same SIR_{target}, the value of the transmit power is calculated

according to following formula:

$$p_i = \frac{I_{inter} + N_{bk}}{r_i \cdot \left(\frac{G}{SIR_{target}} - (n-1) \right)}$$

Wherein:

-P_i is the value of the transmit power of the mobile terminal;

-$SIR_{target\ i}$ is a target signal-to-interference ratio;

-I_{inter} is inter-cell interference power level;

-N_{bk} is background noise;

-r_i is the channel gain;

-G is the processing gain;

-n is the number of mobile terminals assigned within one time slot.

6. The method of any of claims 1-4, wherein when said power control message changes, the mobile terminal receives said power control message broadcast via the downlink.

7. The method of claim 5, wherein when said power control message changes, the mobile terminal receives said power control message broadcasted via the downlink.

8. A device for controlling a mobile terminal's transmit power in CDMA-TDD

system, comprising:

a receiving module, receiving a power control message from a base-station transmitted via a downlink;

a channel gain calculating module, acquiring a channel gain value between said mobile terminal and said base-station according to information transmitted via the downlink; and

a transmit power calculating and setting module, calculating a value of the transmit power of said mobile terminal according to said power control message, said channel gain value and a set processing gain value, and adjusting the transmit power of said mobile terminal according to said value of the calculated transmit power, wherein said adjusting the transmit power of said mobile terminal is synchronized with those of other terminals assigned within a same time slot.

9. The device of claim 8, wherein said power control message at least includes items of background noise, inter-cell interference power level and target signal-to-interference ratio which have changed.

10. The device of claim 9, wherein said transmit power calculating and setting module calculates the value of the transmit power according to following formula:

$$p_i = \frac{SIR_{t\arg eti} \cdot (I_{int\,er} + N_{bk})}{r_i \cdot (G + SIR_{t\arg eti}) \cdot (1 - \sum_{i=1}^{n} \frac{SIR_{t\arg eti}}{G + SIR_{t\arg eti}})}$$

Wherein:

-P_i is the value of the transmit power of the mobile terminal;

-$SIR_{target\,i}$ is a target signal-to-interference ratio;

-I_{inter} is inter-cell interference power level;

-N_{bk} is background noise;

-r_i is the channel gain;

-G is the processing gain;

-n is the number of mobile terminals assigned within one time slot;

wherein N_{bk}, I_{inter} and $SIR_{target\,i}$ are acquired according to said power control message transmitted via the downlink.

11. The device of claim 10, wherein those items of background noises, inter-cell interference power level and target signal-to-interference ratio which have not changed should not be included in said power control message and said items will still be used in a calculation of a new power value.

12. The device of claims 10 or 11, wherein when all of said mobile terminals have substantially same SIR_{target}, said transmit power calculating and setting

module calculates the value of the transmit power according to following formula:

$$p_i = \frac{I_{inter} + N_{bk}}{r_i \cdot \left(\frac{G}{SIR_{target}} - (n-1) \right)}$$

Wherein:

-P_i is the value of the transmit power of the mobile terminal;

-$SIR_{target\ i}$ is a target signal-to-interference ratio;

-I_{inter} is inter-cell interference power level;

-N_{bk} is background noise;

-r_i is the channel gain;

-G is the processing gain;

-n is the number of mobile terminals assigned within one time slot.

13. The device of any of claims 8-11, wherein when said power control message changes, the mobile terminal receives said power control message broadcasted via the downlink.

14. The method of claim 12, wherein when said power control message changes, the mobile terminal receives said power control message broadcasted via the downlink.

15. A mobile terminal in CDMA-TDD system, comprising:

a receiving means, receiving and processing wireless signals from a downlink;

a transmitting means, transmitting wireless signals via a uplink; and

a transmit power control means, receiving a power control message transmitted via the downlink, after acquiring a channel gain value between said mobile terminal and a base-station, calculating a value of the transmit power of said mobile terminal according to said power control message, said channel gain value and a set processing gain value, and adjusting the transmit power of said mobile terminal according to said value of the transmit power, wherein said adjusting the transmit power of said mobile terminal is synchronized with those of other terminals assigned within a same time slot.

16. The mobile terminal of claim 15, wherein said power control message at least includes items of background noise, inter-cell interference power level and target signal-to-interference ratio which have changed.

17. The mobile terminal of claim 16, wherein said transmit power control means calculates the value of the transmit power according to following formula:

$$p_i = \frac{SIR_{target\,eti} \cdot (I_{inter} + N_{bk})}{r_i \cdot (G + SIR_{target\,eti}) \cdot (1 - \sum_{i=1}^{n} \frac{SIR_{target\,eti}}{G + SIR_{target\,eti}})}$$

Wherein:

-P_i is the value of the transmit power of the mobile terminal;

-$SIR_{target\ i}$ is a target signal-to-interference ratio;

-I_{inter} is inter-cell interference power level;

-N_{bk} is background noise;

-r_i is the channel gain;

-G is the processing gain;

-n is the number of mobile terminals assigned within one time slot;

wherein N_{bk}, I_{inter} and $SIR_{target\ i}$ are acquired according to said power control message transmitted via the downlink.

18. The mobile terminal of claim 17, wherein those items of background noises, inter-cell interference power level and target signal-to-interference ratio which have not changed should not be included in said power control message and said items will still be used in a calculation of a new power value.

19. The mobile terminal of claims 17 or 18, wherein when all of said mobile terminals have substantially same SIR_{target}, said transmit power control means calculates the value of the transmit power according to following formula:

$$p_i = \frac{I_{inter} + N_{bk}}{r_i \cdot \left(\frac{G}{SIR_{target}} - (n-1) \right)}$$

Wherein:

-P_i is the value of the transmit power of the mobile terminal;

-$SIR_{target\ i}$ is a target signal-to-interference ratio;

-I_{inter} is inter-cell interference power level;

-N_{bk} is background noise;

-r_i is the channel gain;

-G is the processing gain;

-n is the number of mobile terminals assigned within one time slot.

20. The mobile terminal of any of claims 15-18, wherein when said power control message changes, the mobile terminal receives said power control message broadcasted via the downlink.

21. The mobile terminal of claim 19, wherein when said power control message changes, the mobile terminal receives said power control message broadcasted via the downlink.

22. A method for power control in a base station, comprising:

transmitting a power control message via a downlink; and

transmitting information via the downlink, wherein said information is related to a transmit power used when the base station transmits signals; and

simultaneously receiving power information transmitted by each mobile terminal assigned in a same time slot.

23. The method of claim 22, wherein said power control message at least includes items of background noise, inter-cell interference power level and target signal-to-interference ratio which have changed.

24. The method of claims 22 or 23, wherein when said power control message changes, the base station transmits said power control message.